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Measuring Employee Perceptions of Organizational Tolerance for Failure

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MEASURING EMPLOYEE PERCEPTIONS OF ORGANIZATIONAL TOLERANCE FOR FAILURE

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ABSTRACT

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by Perla Yael Slutzky

The empirical concept of Organizational Tolerance for Organizational Failure was examined. First, a clear definition of the concept was established and, second, the concept's dimensionality was explored. Based on data collected from 140 participants, four main scale components were identified: Organizational Values and Beliefs, Organizational and Supervisor Support and Motivation, Compensation and Reward Systems, and Recognition. Even though the final scale developed represented a good research base, further development is needed to improve some of the subscale's internal consistencies.

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Introduction

During recent decades, the concept of innovation in general and organizational innovation in particular has received a great deal of attention. From newspapers to professional magazines, books, digital media, and academic journals, innovation is seen as having a key role for survival and competitive advantages in today's changing world. As organizations try to keep up with rapid market dynamics, new technologies, and customers' changing needs, their abilities to adapt to changes and to innovate have gained importance in the business agenda. This increasing significance was illustrated by Crossan and Apayadin (2010), who showed that from the early 1980s to 2008, the number of academic publications on innovation in areas such as management, business, and finance grew more than 300%.

As a matter of fact, the concept of innovation is not new. In 1934, Schumpeter was the first to coin the concept of innovation as novel ideas taking place at a firm level. Throughout the years, different definitions have been suggested; however, none of them have become dominant. The main reason was that each of the definitions called attention to different aspects of innovation. To close this gap, two recent extensive literature reviews proposed multidisciplinary definitions for organizational innovation. Baregheh, Rowley, and Sambrook (2009) defined it as a multi-stage transformation process of new ideas into products, services, and procedures in an organizational setting. Advancement, competition, and differentiation from competitors in the market are possible due to the process of innovation. More recently, Crossan and Apayadin (2010) extended the definition to

"production or adoption, assimilation, and exploitation of a value-added novelty in economic and social spheres; renewal and enlargement of products, services, and markets; development of new methods of production; and establishment of new management systems. It is both a process and an outcome" (p.1155).

Considering the growing competition due to open markets, globalization, and new technologies, more than ever organizations need to be innovative in order to survive. Because changes are taking place at a much faster pace than in the past, organizations find themselves needing to develop new capabilities to approach and overcome constant challenges. These capabilities, which are required at all hierarchical levels, include greater innovative competence (Kriegesmann, Kley, & Schwering, 2005). Therefore, similar to the argument proposed by Damanpour (1991), innovation might be considered as a mechanism to cope with internal and external organizational changes. Hence, it is important for organizations to actively foster innovation if they hope to get through continuously changing environments in a successful way.

Given the breadth of definitions of organizational innovation, previous research has attempted to categorize different forms of innovation to make the term easier to manage. One main distinction made by researchers is between incremental and radical innovation. Incremental innovation includes small technological changes, improvements, and line extensions of existing products. It requires little deviation from the current product-market experiences of the firm (Damanpour, 1997). In contrast, radical innovation involves core changes in technology (Atuahene-Gima, 2005), and represents a deviation from current organizational practices (Damanpour, 1997).

For the purpose of this paper, when discussing innovation, the author of the present study will refer to radical innovation. Even though incremental innovation is considered an innovation, generally speaking, when people are asked to think about innovation, or innovative products, they tend to contemplate the radical type of innovation over the incremental one.

Organizational Failure

Radical organizational innovation may not be attained without experiencing failures. Organizational failure is defined as the discrepancy between the expected or desired results and the actual ones (Cannon & Edmonson, 2005). This definition covers unwanted mistakes and unavoidable results of risk taking and exploration. Cannon and Edmonson (2005) argued that organizational failure is usually perceived as a negative outcome that organizations should seek to avoid. Failure is generally related to money wasting, destroyed reputation and confidence, angry clients, and sometimes a company's death (McGrath, 2011).

In the 2000's, however, a new line of management literature has emerged with a much more positive perspective on organizational failure (Cannon et al., 2005; Farson & Keyes, 2002b; McGrath, 2011; Sitkin, 1992; Sutton, 2004). This new approach assumes that failure is a necessary requirement for organizational success and change. Through failure, organizations can obtain information that they would not have otherwise. In the business world, some leaders seem to agree with this perspective. For instance, Kettering, a former vice president for General Motors, claimed that every educated person needs to understand that "it's not a disgrace to fail, and you must analyze each

failure to find its cause... You must learn to fail intelligently. Failing is one of the greatest arts in the world. One fails forward, towards success" (Farson & Keys, 2002a, p.68). Furthermore, these authors hold that management should be straightforwardly ready to accept risk in order to achieve innovation. Management needs to understand that failure is a natural part of the process, and as such, organizations should display tolerance for failure. Similarly, Dell's CEO, Michael Dell, expressed that failing is the basis for innovativeness advantage (Cottrill, 2010).

Another main premise of this new approach is that failure is inevitable in uncertain environments. Nonetheless, if managed well, failure can represent a very functional tool at hand for innovation and growth (McGarth, 2011). Supporters of this view also believe that crises are the only factors that cause movement and change within organizations. Similar to organisms that get through adversity and become a better fit to their environments, struggling organizations that develop coping mechanisms to overcome crises become more flexible and develop a sense of cohesiveness (Farson et al., 2002b).

Advocates to this new perspective have proposed categories for different failure types that exist in organizational contexts; this is a critical aspect which eases the task of distinguishing and identifying between acceptable/desired and unacceptable/undesirable failures. For instance, Amabile and Kahire (2008) classified failures into three main categories: systems breakdowns, process deviations, and unsuccessful trials. They concluded that all of these types need to be examined and treated with care once they occur. Also, Kriegsmann et al. (2005) provided classification for the possible sources of

error taking place at organizations. Some errors include excessive caution that might result in "paralysis through analysis" (i.e., not taking any action because of fear of possible consequences), the lack of capability to respond, or the over-estimation of one's capabilities (i.e., taking risk without analyzing the odds of success and consequences).

Intelligent Failure

In addition to dissimilar sources, failures might also differ in the degree of learning potential they possess. Sitkin (1992) was the first to define the concept of "intelligent failure" as including mistakes that facilitate and foster organizational learning. For a mistake to be included in this category, it must meet five key characteristics: "(1) they result from thoughtfully planned actions that (2) have uncertain outcomes and (3) are of modest scale, (4) are executed and responded to with alacrity, and (5) take place in domains that are familiar enough to permit effective learning." (Sitkin, 1992, p. 243)

In a similar way, Williams (1998) defined "smart mistakes" as those mistakes that result in non-favorable consequences for the organization, but have been taken under meticulous consideration for the objective of enlarging the organization's decision set. Kriegsmann et al. (2005) called the failure of innovative initiatives that were conducted with calculated risk, "creative and heroic errors." The authors believed that in situations confronting failure, the person responsible for the "creative error" should not be ridiculed but rather stimulated to undertake further, thoughtful risks in a spirit of optimism. These creative errors had a potential learning benefit not only at an individual level, but at the organizational level as well. According to Amabile et al., (2008), unsuccessful trials are

the only kind of failure that might be recognized as "intelligent" and result in positive organizational learning. Therefore, intelligent failures will be considered as the only type of failure that will be acceptable within organizations since they promote organizational learning necessary for radical innovation.

Organizational Learning

Reviewing the literature on organizational innovation suggests that innovative companies share some organizational characteristics. One of the essential qualities necessary to foster innovation within organizations is organizational learning. Senge (2006) defined learning organizations as "organizations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning about how to learn together." (p.4) The author also suggested that to become a successful venture, organizations would have to be able to recognize people's learning capabilities and commitment from all organizational levels.

Garvin, Edmonson, and Gino (2008) proposed that employees in a learning organization contribute to developing tolerance, encouraging honest dialogue, and thinking collectively in a systematic way. As a result, this kind of organization will be more flexible and adaptable to unpredictable changes than its competitors. Not surprisingly, an increasing number of organizations are redefining their mission statements to tag themselves as learning organizations in order to prove themselves superior to others in the competition for innovation (Kriegesmann et al., 2005).

Previous research has found a positive relationship between organizational learning and innovation. Pak (2004) claimed that a learning organization was the natural foundation from which effective innovation surfaced. He believed that it was more important and useful to focus on the ability of an organization to learn to innovate and discover innovative ways to do so than to focus on an organization that would innovate. Similarly, in a meta-analysis conducted by Damanpour (1991), the author suggested that learning environments created by leaders supported the occurrence of learning by exploration, which eventually resulted in an innovativeness advantage for organizations.

Exploitation and Exploration

Exploitation and exploration are two extreme ends of the organizational learning spectrum (Lavie, Stettner, & Tushman, 2010). At the same time, both are important steps in the innovation process. These two competences are necessary for an organization's prosperity and survival. However, they compete against each other for an organization's scarce resources.

One end of the organizational learning spectrum is exploitation. This was first described by March (1991), who used words such as improvement, efficiency, implementation, and execution. In later work, Levinthal and March (1993) limited the extent of the first definition to the knowledge domain. They claimed that exploitation demands the utilization and expansion of the already known. Atuahene-Gima (2005) found that exploitation was only related to incremental innovation performance. In addition, Danneels (2002) asserted that exploitation might hinder radical innovations due to its focus on increasing homogeneity, effectiveness, and productivity upgrades in

existing products. Contrary to exploration, exploitation focuses on short-term organizational performance by increasing reliability and effectiveness and decreasing the chances of mistakes and failures.

On the other end of the organizational learning spectrum is exploration, which aims for long-term organizational performance. It involves activities such as experimenting, searching, and discovering that the main goal is the pursuit of new knowledge (March, 1991). Exploration has a central and revealing role in the innovation process. When undertaking exploration, the main objective is to identify developing markets and technologies to generate radical, rather than incremental, innovations that will offer added value to the organization's customers (Lavie et al., 2010; March, 1991). Because of its intrinsic nature, exploration usually changes the organization's current knowledge base and competencies (Lavie et al., 2010). In addition, Sutton (2004) believed that breakthroughs or radical innovation are only possible through exploration.

Because the central aim of exploration is search and experimentation, failure is an inherent element of this organizational learning approach. As Farson and Keys (2002b) pointed out, failures are the proof of exploration. The more people engage in experimentation, the more mistakes they are expected to make. Therefore, the authors concluded that an increased level of errors in organizations might represent a manifestation of an innovative environment. Likewise, Sutton (2004) claimed that what was generally called errors, outliers, or mutations in organizations were the "lifeblood of innovation." When innovation is the goal, people need to continuously develop new ideas that, like mutations in natural environments, often fail to sustain and outspread.

One main consequence of engaging in organizational exploration and overcoming increased levels of failures is that organizations become more resilient and flexible to uncertain environments and markets (Sitkin, 1992). Kriegsman et al. (2005) explained that radical innovation would not materialize in organizations characterized by risk and mistake aversion. Reluctance towards errors will result in the avoidance of experimentation; consequently, the organizational learning processes needed to pursue new knowledge will not take place. According to Levinthal and March (1993), a psychological safety net needs to be offered by organizations for explorative failures. Therefore, companies that are not afraid of uncertain environments and "chaos" will be in the best position to achieve radical innovation (Keyes et al., 2002b).

Intelligent Failure as an Outcome of Exploration

Intelligent failure is a major aspect of undertaking exploration for innovation purposes, but it is sometimes under-valued. First, intelligent failures should be more highly valued because they provide information to people on how to enhance their decision making. Although they do not indicate what decisions would have been correct; they improve the organization's decision making process in general (Williams, 1998). Second, because intelligent failures are often of a modest scale, small failures can act as "early warning signs" that help avoid bigger failures (Sitkin, 1992). Cannon et al. (2005) explained that organizations might overlook small daily failures because at the time they appear to be trivial mistakes or isolated irregularities. As a consequence, organizations do not take advantage of the opportunities that smart failures provide. The authors advise organizations to actively develop intelligent processes to learn from small failures.

This thesis will focus on radical innovation. Because exploration seems to be the only approach related to this kind of innovation, the author will focus on exploration rather than exploitation. In order for exploration to be successfully implemented, organizations need to accept and embrace the occurrence of planned and small errors; therefore, they need to display organizational tolerance for intelligent failure. Hence, tolerance for intelligent failure will play an important mediating role between exploration and innovation.

Organizational Tolerance for Intelligent Failure

Organizational tolerance for intelligent failure is defined as organizational practices and characteristics that demonstrate the willingness to accept, promote, and enhance the occurrence of exploration within an organization. Some of these practices and characteristics might be embodied in the organization's compensation and reward systems and in their organizational and management support activities.

Organizational tolerance for intelligent failure is critical in today's competitive markets because of its impact on the innovative capability of organizations. Kriegesmann et al. (2005) argued that organizations whose culture displayed failure intolerance would develop innovative incompetence because creative and fearless behaviors would be avoided. Failure has innovative potential when understood as a learning process that provides information that otherwise would not be available. As McGrath (2011) explained, managers understand the need to reduce the fear of failure, engage in experiments constantly to fail early and often, and learn as much as possible in the process. Moreover, Farson et al. (2002b) pointed out that what might be considered

failures or mistakes gave birth to famous and successful products such as Nylon, Teflon, microwave ovens, Gore-Tex, and 3M Post-It Notes.

Another important reason why organizational tolerance for failure is required is related to the entrance of a new generation of workers to the labor market (Farson & Keyes, 2002b). These new workers are more challenge and risk-seeking than their predecessors. They tend to be more responsive to less stable situations and more stimulated by uncertainty. These younger employees believe that in achieving successful and innovative results, failure is inevitable; thus, people should not only tolerate it, but encourage it to happen. For this reason, organizations that do not tolerate the occurrence of failures are likely to risk losing their best and most innovative employees. Therefore, organizations should adopt characteristics and practices that not only tolerate but actually promote organizational exploration. Based on the existing literature, five main practices and characteristics were identified: Compensation and Reward Systems, Organizational Stories, Risk Taking, Psychological Safety, Supervisor Support. These aspects will be discussed in the next section.

Organizational Practices and Characteristics Promoting Exploration

Compensation and Reward Systems. Compensation and reward systems are commonly tied to employee performance. To promote exploration in organizations, the main obstacle seems to be the development of a system that accounts for opposite forces inherent in the innovation process: exploration and exploitation (McGregor, 2006). For instance, IBM uses two different frames of time to evaluate its engineers: a one-year frame to set bonuses and a three-year frame to determine statuses and salaries. The idea

behind this system is to counterbalance possible setbacks that might occur in a certain year due to the innovation process. In the same line of thinking, Ederer and Manso (2010) found that pay-for-performance for tasks that involve innovation through exploration had a detrimental result on employees' performance. They concluded that employees under a pay program that tolerates failure in early stages of the exploration activity and rewards long-term success tend to explore more and, as a result, are more likely to discover superior strategies than individuals receiving pay-for-performance incentives.

Organizational and Managerial Support.

Organizational Stories. Buckler and Zien (1996) interviewed several companies around the world recognized for their maturity and innovation (e.g., Apple Computers, Polaroid Corporation, 3M, HP). The researchers found that a common theme among these organizations was that their innovation processes could be characterized by stories of success, failure, and failure turned into success. The stories varied in content; however, a common attribute for all of them was that every tale described innovation qualities and behaviors of real people, many of whom their employees had never even met. The authors believed that stories represent the organization's most important beliefs and values, and these representations are the medium for fast organizational learning and content retention needed for innovation purposes.

To illustrate and establish the power of organizational stories, Buckler and Zien (1996) described how companies such as 3M had brought a consultant to help the organization collect their innovation stories and coach senior scientists and managers how to tell these stories. The researchers concluded that these stories helped to build a

"collective identity" which motivated employees to engage, persevere, courage, and believe in the innovation process.

Risk Taking. In order to explore new opportunities and ideas in organizations, employees need to be encouraged to take calculated risks. One way to explore new ideas in a calculated manner is by testing the ideas in early stages, before large investments are made in certain projects; these early tests are known as small-scale prototypes or pilots (McGrath, 2011). Pilots allow employees to introduce new product or service ideas to potential users. In this way, organizations learn to fail fast and cheap, providing an opportunity to walk away from failed projects in a solid and intelligent way. In other words, pilots help identify the need to cancel projects before it is too late. When this happens, a solid disengagement project process needs to be put in place to collect data that will encourage organizational learning to avoid making the same mistakes later again.Risk taking is fundamental for exploration to occur. Akio Morita threatened to resign from his position at Sony if the company decided not to support him with his new product ideas (Buckler et al., 1996). Sony took a chance on Morita's ideas that were opposed to both market information and the beliefs of the entire company. As a result the company gained a critical competitive advantage with the Walkman market.

Psychological Safety. Another way to encourage explorative activities in the organizational context is by establishing programs or events where intelligently failed ideas are celebrated. Kriegesmann et al., (2005) explained how BMW implemented the "Creative Error of the Month" initiative. This program openly called for employees to make mistakes and allowed them to take calculated risks. These behavioral maxims were

designed to create risk-friendly environments, while providing latitude for acceptable mistakes during the exploration process required for radical innovation.

Another example of how to encourage exploration throughout organizations is 3M. Employees possess the freedom to break operating rules, try a new course of actions, and challenge their superiors in the name of innovation. Their main premise is that as business grows, employees are delegated more responsibilities and practice more initiative. When undertaking new initiatives, mistakes might occur, and management needs to be supportive and not be destructive since that kills initiative (Buckler et al., 1996).

Supervisor Support. Employees are usually willing to take risks and explore new things in organizations when they believe they are supported by their direct supervisor. McGregor (2006) suggested that leaders should create an environment that is safe for taking risks. As a first step, managers should distinguish between acceptable and unacceptable mistakes. This will allow them to achieve two main things. First, it creates a non-punitive work environment where productive mistakes occur. Second, it allows managers to promote intelligent failure, making them the basis for learning (Keyes et al., 2002a). To do so, managers need to be interested in their direct reports' tasks. Failure tolerant managers' engagement is displayed through conversations with their employees about current tasks that they are performing, and asking thoughtful questions to help them examine and learn from mistakes. These managers seek to collaborate with employees rather than control them. Lastly, to promote more exploration and convey a message that

failure is tolerated, managers should openly admit their own failures and mistakes.

Previous Research

Although there is an extensive literature on the importance of intelligent failure for innovation, only one article has attempted to operationalize the concept of tolerance for failure and utilize it for empirical research. Danneels (2008) defined tolerance for failure as one of the organizational antecedents of second-order competencies. A second-order competency is defined as the ability of a firm to engage in exploration or, in other words, to acquire new competencies. Tolerance for failure was defined by the author as the organizational perception of failure as a learning opportunity. One of Danneels' hypotheses was that the higher a firm's tolerance for failure, the higher its marketing and R&D explorative activities. In order to operationalize the concept of tolerance for failure, the author developed an original scale: "It is understood that failure is a necessary part of success," "Management doesn't understand that when you try something new, you sometimes fail," "Failure is accepted as an inevitable byproduct of taking a lot of initiatives," and "A mistake is seen as an opportunity to learn" were the four items included in the scale. Research data were collected at two different points in time (i.e., 2000 and 2004).

The author of the present study believes that the definition provided by Danneels (2008) presents three main conceptual problems. First, tolerance for failure as the organizational perception of failure as a learning opportunity is too broad in the sense that it includes any kind of failure. In other words, his study did not differentiate between different kinds of failure. Therefore, failures with no learning potential, such as systems

breakdowns, process deviations, and paralysis through analysis, are being placed at the same level as intelligent failure. Consequently, the research results might be misleading.

Second, defining tolerance for failure as an "organizational perception" makes the frame of reference unclear for respondents. Participants were asked to respond based on how their company operates, rather than how they would like it to operate. For an item such as "A mistake is seen as an opportunity to learn," it is not clear at what level of management the respondent should answer. There might be situations where top and mid management level behaviors differ regarding their displayed tolerance for failure.

A third conceptual concern is that the items fail to address the gap between the organization's explicit intentions (i.e., the organization's mission statement) and its actual behavior. That is, an organization might recognize itself as willing to tolerate failure, but at the same time be afraid of engaging in exploration due to the chances of failing. It might be very useful to understand whether consistency exists between explicit and implicit organization behaviors.

From a methodological point of view, relatively few items comprise the scale. This is a central concern because it makes it difficult to determine of the concept's dimensionality. However, it is important to note that the creation of a measurement scale for tolerance for failure was not Danneels' main objective. The author did not try to establish any dimensions in his research. Another relevant issue resulting from a small number of scale items is the reliability concern. The fewer number of items, the less reliable the scale. Lastly, statistically Danneels (2008) failed to establish a relationship between tolerance for failure and second-order competencies in his longitudinal research.

He unexpectedly found a negative lagged effect of tolerance for failure on R&D competencies. He attributed the lack of impact to the absence of accountability created by a culture of organizational failure tolerance. Employees might abuse the idea that failure is a learning opportunity and, as a consequence, this may lead them to take unconscientious decisions, while feeling no responsible for their actions.

These results draw attention to one important aspect: the definition of tolerance for failure is quite different from the one that will be used in the present study. Undesirable types of failures, such as over-estimation of one's capabilities (i.e., taking risk without analyzing the odds of success and consequences), when tolerated by organizations, might be responsible to create the feeling of laxness that Danneels (2008) described. However, intelligent failure, will probably avoid the lax situation mentioned previously because it consists of thoughtfully planned actions that builds a sense of accountability.

Purpose of the Study

The present study will aim to close the gaps and concerns describe above. First, it will provide a new and more explicit definition for the concept of tolerance for failure. In addition, a categorization and acceptability for different kinds of failures will be offered to readers to narrow down the new definition. Therefore, only acceptable or desirable failures will be included in this research. Second, this study will extend the number of items, making sure that the frame of reference remains clear for respondents.

The main purpose of this paper will be to develop a reliable assessment tool intended to measure employee perceptions of organizational tolerance for intelligent

failure. The present study will be of an exploratory nature and will seek to identify the dimensions that constitute the concept. Once this instrument is developed, organizations will be able to have a better understanding of how employee perceptions of an organization's tolerance for failure. This study will also allow organizations to understand and research their need to introduce changes required to improve their innovation capabilities accordingly.

Method

Scale Development

The author set out to develop a scale to measure employee perceptions of organizational tolerance for intelligent failure required for radical innovation. This scale was based on several organizational practices and characteristics that were identified in the literature as tolerating and promoting exploration throughout organizations: compensation and rewards systems, organizational stories, risk taking, psychological safety, and supervisor support.

Compensation and reward systems refer to monetary and non-monetary practices, such as bonuses and promotions, put in practice throughout organizations to reward or punish behaviors. Organizational stories are defined as stories, gathered from past and present organizational experiences of success or failure, and are believed to impart motivational lessons for current employees. Risk taking refers to organizational support provided to employees to engage in activities, such as exploration, where results are usually unpredictable. By psychological safety, the author alludes to the general sense of support and motivation employees feel after an undesirable organizational outcome has occurred. Supervisor support refers to understanding offered by direct supervisors to their direct reports. Organizational stories, risk taking, psychological safety, and supervisor support are grouped in this study under a general category called "organizational and managerial support."

In the first stage, the author included four items developed by Danneels (2008): "It is understood that failure is a necessary part of success;" "Management doesn't

understand that when you try something new, you sometimes fail;" "Failure is accepted as an inevitable byproduct of taking a lot of initiatives;" and "A mistake is seen as an opportunity to learn." In the second stage, because no additional scales had been developed for tolerance for failure, the author wrote original items based on the review of the literature. All items were examined to assure that each item expressed only one idea, avoided the use of negatives, did not use jargon or expressions, and were at an adequate reading level for respondents. The author also focused on including items written in both positive and negative wording (Spector, 1990).

The original scale, consisting of 33 items, was sent to four reviewers for their examination and feedback. These contributors were selected from various backgrounds (i.e., English instructors, industrial and organizational psychologists, engineers) to ensure clarity and accuracy, as well as relevance of the statements for employees in organizations.

Most of the items were well accepted by the reviewers, with none of the items being eliminated from the original scale. However, some reviewers agreed on the need to reword or expand specific items for better definition. For example, the item "I believe my company's compensation practices reward pay-for-performance for tasks that involve exploration" took for granted that all companies rewarded performance. As a result, a new item was added in front of the above item: "My company rewards for performance." If the respondent's answer was yes, then they were taken to the next item, "I believe my company's compensation practices reward pay-for-performance for tasks that involve exploration." In addition, to explore employees' perceptions of compensation practices

in greater detail, two new items were added: “I feel less motivated to get involved in exploration if I know the results will affect my performance reward” and “I think my company’s pay programs tolerate failure in early stages of the exploration activity and reward long-term success.”

A total of 36 items were included in the final scale-eight items measured compensation and reward practices, five items measured organizational stories, five items measured risk taking, six items measured psychological safety, six items measured supervisor support, and additional six items were included for non-categorized organizational practices.

Items in the scale such as “I believe my company punishes people that fail” and “I feel that the rewards programs offered by my company encourage people to explore their ideas, regardless of eventual outcomes,” were intended to measure compensation and rewards practices. Organizational stories was addressed with items such as “At my company, stories of past failures are used to encourage employees to try new things.” In addition, risk taking was measured by items like “I feel my organization wants me to avoid taking even calculated risks,” and “My company understands that risk taking is a necessary requirement for exploration.” Examples of psychological safety were “My company accepts that failure is a necessary part of success” and “My company believes in “fail early, fail fast, fail cheap.” For the measurement of supervisor support, items such as “My manager supports me when I try different ways of doing things,” and “I feel that my manager encourages me to take small and thoughtful risks” were asked. Examples for the non-categorized items were “The company I work for publicly

expresses a tolerance for failure," and "When a project is cancelled at work, it is analyzed to understand what went wrong in order to avoid making similar mistakes in the future."

Response choices for each item were presented on a five-point Likert scale measuring the participant's degree of agreement with each statement. The responses ranged from strongly disagree (5) to strongly agree (1) with a middle response of neither agree nor disagree (3). This five alternative choice format was chosen to provide participants a wide range of responses without creating any unnecessary stress by the number of choices. Moreover, it was taken into consideration that because the concept of organizational tolerance for failure was a new one, there might be aspects that employees were not definitive about, and therefore the author decided to provide respondents with a neutral response choice.

An additional five items asking for demographics and background information were included in the survey. These variables were age, gender, employment status (i.e. full-time employed, part-time employed, and unemployed), industry, and length of employment.

Participants

Because this study was intended to develop a scale for employees' perceptions on organizational tolerance for failure, participation in the online survey was limited to experienced professionals. Furthermore, self-employed professionals were not included in the sample. Because self-employed professionals frequently work in several organizations at the same time, they do not report directly to management or work under

one organization's philosophy, their perceptions might not be pertinent for the purpose of this current study.

Although a total of 161 responses participated in the online survey, only 140 responses were utilized for analysis. Two main criteria were determined by the author to eliminate responses: considerable amount of missing data per participant and eligibility. In other words, data for those participants who failed to fill out at least 95% of their questionnaire or had no professional experience were eliminated to ensure a better analysis. As shown in Table 1, 55% of the participants were female, and 44.3% were male. In addition, 45.7% were between 18 to 29 years old, 22.9% were between ages 30 and 39 years old, 18.6% ranged between 40 to 49 years old, 7.1% were 50 to 59 years old, and 5% were 60 years old or more. From the total participants 61.4% were employed full-time, 28.6% were employed part-time, and the additional 8.6% were unemployed.

Procedure

An online survey was created and administered to participants to allow them to respond at a time convenient for them. Participants were selected by availability (i.e., the researcher's personal and professional contacts). The survey was administered through an online survey tool, and participants were contacted by email or personal messages on professional networking sites, and professional online forums. The message contained a brief explanation of the purpose of the study, the number of items, the estimated time to complete the survey, and the eligibility parameters to participate in the survey. In addition, it explained that the survey was completely confidential and anonymous.

Table 1

Demographic Characteristics of Participants

Demographic Variable	N	%
Age		
18-29	64	45.7
30-39	32	22.9
40-49	26	18.6
50-59	10	7.1
60+	7	5.0
Gender		
Male	62	44.3
Female	77	55.0
Employment Status		
Full-Time	86	61.4
Part-Time	40	28.6
Industry		
High-Tech	37	26.4
Services	23	16.4
Other	20	14.3
Education	19	13.6
Finance	18	12.9
Retail	13	9.3
Consulting	12	8.6
Bio-Tech	3	2.1
Media	2	1.4
Length of Employment		
Less than a year	29	20.7
Between 1 to 2 years	35	25.0
Between 2 to 5 years	47	33.6
More than 5 years	29	20.7

Note. n = 140

When participants clicked on a link to the survey, they landed on the agreement for participation survey page, which provided them with the researcher's contact information, information on the institution in charge of the research, and anticipated risks and benefits for participation. In addition, it was explained to participants that their participation would be completely voluntary, and they had the right to withdraw at any time. Participants were allowed to take the survey at a convenient time to them, and if they failed to complete the survey at one time, they were allowed to later re-access the survey. A reminder was sent to potential participants two weeks after the original email/message.

In the second stage, in order to gather a larger sample of data, the author administered the survey to business students at San José State University. Participants were required to fill out an internal questionnaire with basic demographic information such as gender, age, academic major, employment status, and most current position they held. After the information was submitted, the link to the online survey was made visible to the respondents. The survey was identical to the one created for non-students participants discussed earlier.

Results

Descriptive Statistics

Even though 161 responses were collected in the present research, after reviewing for missing data and eligibility, only 140 were analyzed. Each of the Employee Perceptions of Organizational Tolerance for Failure items was examined using measures of central tendency, variability, skewness, and kurtosis. All items had a response format ranging from a minimum of 1 (strongly agree) to a maximum of 5 (strongly disagree), with the exception of one item, "My company rewards for performance," which had a yes/no response format.

The descriptive statistics indicated that most items displayed a normal distribution (Table 2). No major concerns on skewness and kurtosis were identified. Having said that, participants strongly disagreed with the statement, "My company organizes events that celebrate projects that did not succeed" ($M = 4.16$, $SD = .96$). This same item showed a negative measure for skewness (-1.24) and 1.16 for kurtosis. Therefore, the author was concerned that this item would be poorly correlated with other items or might result in a less reliable analysis. Other items that called the author's attention were "My manager supports me when I try different ways of doing things," "I believe my company is willing to take some risks to create new innovative services or products," and "I believe stories about successes and failures are an important part of meetings and company events." In comparison with the remaining items, these three items displayed a relatively skewed pattern (.95, .79, and .87, respectively). In the examination for kurtosis

issues, the author found that most of the items showed a negative pattern. This pattern indicated variability in participants' responses, hence were not considered as a concern.

Table 2

Employee Perceptions of Organizational Tolerance for Failure Scale: Descriptive Statistics (n=138-140)

	Mean	SD	Skewness	Kurtosis
Compensation and Reward Systems				
I believe my company punishes people that fail (R)	2.77	1.10	.24	-.87
I feel that the rewards programs offered by my company encourage people to explore their ideas regardless of eventual outcomes	3.11	1.13	.40	-.99
My company organizes events that celebrate projects that did not succeed	4.16	.96	-1.24	1.16
I know people in my organization who were promoted even though they were involved in projects that failed	2.69	1.03	.28	-.53
I believe my company's compensation practices reward pay-for-performance for tasks that involve exploration	3.25	1.02	-.30	-.99
I feel less motivated to get involved in exploration if I know the results will affect my performance reward (R)	2.56	.96	.43	-.22
I think my company's pay programs tolerate failure in early stages of the exploration activity and reward long-term success	2.38	.90	.55	.59
Organizational Stories				
At my company, stories of past failures are used to encourage employees to try new things	139	3.25	1.11	-0.29
My company considers failure to be unacceptable	140	2.73	1.12	0.37
Stories about past successes and failures in my organization encourage me to try new things	2.74	1.08	.23	-.90
I believe stories about successes and failures are an important part of meetings and company events	2.14	1.03	.87	.43
I rarely hear stories of past failures in my company (R)	3.17	1.06	-.08	-.99
Risk Taking				
I feel my organization wants me to avoid taking even calculated risks (R)	2.71	1.07	.24	-.80
My company provides resources to develop pilot studies or prototypes of new products or services	2.70	1.08	.59	-.42
I believe my company is willing to take some risks to create new innovative services or products	2.33	.92	.80	.41
I think my company prefers to avoid taking risks (R)	3.30	1.21	-.23	-1.07
My company understands that risk taking is a necessary requirement for exploration	2.63	1.03	.40	-.78
Psychological Safety				
My company accepts that failure is a necessary part of success	2.76	1.08	.12	-.84
My company accepts failure as an inevitable byproduct of taking initiatives	2.89	1.01	.22	-.80
Mistakes are seen by my company as opportunities to learn	2.55	1.02	.39	-.56
When failures take place in my company, they are not criticized, but analyzed to avoid them in the future	2.84	1.06	.15	-.83
My company believes in "fail early, fail fast, fail cheap"	3.05	1.07	-.10	-.65
I am encouraged at work to keep trying, even when something I try goes wrong	2.40	1.10	.53	-.54
Supervisor Support				
Senior management doesn't understand that when you try something new, you sometimes fail (R)	2.73	1.12	.37	-.72
My manager supports me when I try different ways of doing things	2.25	1.00	.95	.56
I feel that my manager encourages me to take small and thoughtful risks	2.44	.98	.53	-.30
My manager has an analytical approach when mistakes occur that helps me	2.62	1.12	.52	-.66

Employee Perceptions of Organizational Tolerance for Failure Scale: Descriptive Statistics (n=138-140)

	Mean	SD	Skewness	Kurtosis
understand why they happened				
I feel criticized and evaluated if I explore new ideas and they do not work (R)	3.02	1.14	.16	-1.16
My manager has shared with me some of his/her own work mistakes	2.63	1.21	.55	-.80
Others				
At work, I am allotted time to work on projects of my own interest	2.82	1.23	.16	-.98
The company I work for publicly expresses a tolerance for failure	3.31	1.03	-.17	-.60
The company I work for values the need for exploration	2.48	1.05	.53	-.40
When a project is not going as expected, there is a clear plan on how to end it before more resources are wasted	3.03	1.13	-.08	-.58
When a project is cancelled at work, it is analyzed to understand what went wrong in order to avoid making similar mistakes in the future	2.51	1.20	.43	-.99
My company allots special budgets to explore new projects/products	2.93	1.12	.26	-.72

Note. (R) Reversed Word Items

Pearson Correlations

Pearson correlations were computed for all the items included in each of the six aspects of organizational tolerance for failure. Regarding Compensation and Rewards Systems correlations, the items did not show a consistent pattern (Table 3). In other words, high and low correlations were found among the scale items, which do not indicate any specific problematic items.

The items "I feel less motivated to get involved in exploration if I know the results will affect my performance reward," and "I think my company's pay programs tolerate failure in early stages of the exploration activity and reward long-term success" had almost no relationship to other items. The item "I think my company's pay programs tolerate failure in early stages of the exploration activity and reward long-term success" was found only slightly related to "I know people in my organization who were promoted even though they were involved in projects that failed" ($r = .18$, $p < .05$). In addition, "I feel less motivated to get involved in exploration if I know the results will affect my performance reward" was somewhat correlated to "I feel that the rewards programs

offered by my company encourage people to explore their ideas regardless of eventual outcomes." (r =.20, p < .05)

Table 3

Pearson Correlation: Compensation and Rewards Systems (n = 138)

	1	2	3	4	5	6	7
1. I believe my company punishes people that fail	-						
2. I feel that the rewards programs offered by my company encourage people to explore their ideas regardless of eventual outcomes	.31**	-					
3. My company organizes events that celebrate projects that did not succeed	.20*	.25**	-				
4. I know people in my organization who were promoted even though they were involved in projects that failed	.37**	.14	.19*	-			
5. I feel less motivated to get involved in exploration if I know the results will affect my performance reward	.10	.20*	.10	.11	-		
6. I think my company's pay programs tolerate failure in early stages of the exploration activity and reward long-term success	.15	.16	.06	.18*	-.06	-	
7. I believe my company's compensation practices reward pay-for-performance for tasks that involve exploration	-.05	-.18*	-.25**	-.04	.15	-.49**	-

*. p < .05, two-tailed. **. p < .01, two-tailed.

For Organizational Stories (Table 4), the item "Stories about past successes and failures in my organization encourage me to try new things" showed high correlations to all of the other items with the exception of "I rarely hear stories of past failures in my company," which the correlation was much weaker (r = .18, p < .05). Additional items revealed different correlation strengths that similarly to the compensation and rewards systems, showed no clear pattern.

Table 4

Pearson Correlation: Organizational Stories (*n*=139)

	1	2	3	4	5
1. At my company, stories of past failures are used to encourage employees to try new things	-				
2. My company considers failure to be unacceptable	.13	-			
3. Stories about past successes and failures in my organization encourage me to try new things	.47**	.27**	-		
4. I believe stories about successes and failures are an important part of meetings and company events	.22**	.11	.33**	-	
5. I rarely hear stories of past failures in my company	.11	.02	.18*	.15	-

*. $p < .05$, two-tailed. **. $p < .01$, two-tailed.

Table 5 shows correlations for the Risk Taking aspect of organizational tolerance for failure. Most items showed high and significant correlations between themselves. Only one positive and weak, but still statistically significant relationship was found between the items "My company provides resources to develop pilot studies or prototypes of new products or services" and "I think my company prefers to avoid taking risks." ($r = .17$, $p < .05$)

Table 5

Employees' Perceptions on Organizational Tolerance for Failure Scale: Pearson Correlation
Risk Taking (*n* =139*)*

	1	2	3	4	5
1. I feel my organization wants me to avoid taking even calculated risks	-				
2. My company provides resources to develop pilot studies or prototypes of new products or services	.23**	-			
3. I believe my company is willing to take some risks to create new innovative services or products	.44**	.36**	-		
4. I think my company prefers to avoid taking risks	.40**	.17*	.45**	-	
5. My company understands that risk taking is a necessary requirement for exploration	.55**	.32**	.56**	.46**	-

*. $p < .05$, two-tailed. **. $p < .01$, two-tailed.

The analysis for intercorrelations among items for the Psychological Safety subscale is shown in Table 6. They revealed that most items showed positive, high, and

significant relationships among themselves. They ranged from $r = .43$ to $r = .64$. Only one item, "My company believes in "fail early, fail fast, fail cheap" displayed no relationship with any other items. This might indicate that this item measures a different dimension.

Table 6

Pearson Correlation: Psychological Safety (n=136)

	1	2	3	4	5	6
1. My company accepts that failure is a necessary part of success	-					
2. My company accepts failure as an inevitable byproduct of taking initiatives	.63**	-				
3. Mistakes are seen by my company as opportunities to learn	.64**	.58**	-			
4. When failures take place in my company, they are not criticized, but analyzed to avoid them in the future	.43**	.51**	.56**	-		
5. My company believes in "fail early, fail fast, fail cheap"	.13	.14	.03	.08	-	
6. I am encouraged at work to keep trying, even when something I try goes wrong	.45**	.55**	.55**	.47**	-.14	-

*. $p < .05$, two-tailed. **. $p < .01$, two-tailed.

Correlations for Supervisor Support (Table 7) showed small to moderately strong correlations ranging from $r = .18$ to $r = .56$. The item with the lowest, nonetheless significant correlation was "Senior management doesn't understand that when you try something new, you sometimes fail." ($r = .18$) With this exception, this item was moderately related to any other item in the subscale.

Table 7

Pearson Correlation: Supervisor Support (n=140)

	1	2	3	4	5	6
1. Senior management doesn't understand that when you try something new, you sometimes fail	-					
2. My manager supports me when I try different ways of doing things	.25**	-				
3. I feel that my manager encourages me to take small and thoughtful risks	.35**	.53**	-			
4. My manager has an analytical approach when mistakes occur that helps me understand why they happened	.18*	.54**	.42**	-		
5. I feel criticized and evaluated if I explore new ideas and they do not work	.33**	.43**	.44**	.33**	-	
6. My manager has shared with me some of his/her own work mistakes	.22**	.52**	.56**	.52**	.39**	-

*. $p < .05$, two-tailed. **. $p < .01$, two-tailed.

For the items grouped under "Others," shown in Table 8, the six items displayed small to moderate correlations among themselves. While all other five items correlated with at least four other items, the item, "At work, I am allotted time to work on projects of my own interest" was correlated to only two items, "The company I work for values the need for exploration" ($r = .29$, $p < .05$) and "My company allots special budgets to explore new projects/products" ($r = .19$, $p < .01$).

Table 8

Pearson Correlation: Others (n=140)

	1	2	3	4	5	6
1. At work, I am allotted time to work on projects of my own interest	-					
2. The company I work for publicly expresses a tolerance for failure	.06	-				
3. The company I work for values the need for exploration	.29**	.28**	-			
4. When a project is not going as expected, there is a clear plan on how to end it before more resources are wasted	.04	.34**	.32**	-		
5. When a project is cancelled at work, it is analyzed to understand what went wrong in order to avoid making similar mistakes in the future	.12	.48**	.28**	.43**	-	
6. My company allots special budgets to explore new projects/products	.19*	.30**	.11	.18*	.19*	-

*. $p < .05$, two-tailed. **. $p < .01$, two-tailed.

Factor Analysis

A principal components analysis (PCA) was conducted to explore the underlying dimensions for the "Employees' Perceptions on Organizational Tolerance for Failure" scale. This type of analysis was selected because the author did not have any adequate reasons to discard any of the data gathered for the study. In addition, a Varimax rotation was used under the assumption that different components would be unrelated to each other. This analysis yielded nine components with eigenvalues greater than 1.4. These nine components accounted for almost 65% (64.95%) of the total variance. However, upon reviewing the dimensions in greater detail, the author found that five out of the nine components consisted of only one or two items. Hence, when deciding how many

dimensions to extract to reach the best solution, the following criteria were decided: (a) the component must be interpretable, meaningful, and predicted theoretically (Sprecher & Metts, 1989); (b) an item had to load high (>.40) on at least one dimension; (c) eigenvalues of 1.4 and higher only; and (d) communalities for each item must to be greater than .25.

Using these criteria, several factor analyses were run. As a result, four items were eliminated from the final scale. “At work, I’m allotted time to work on projects of my own interest,” “I believe stories about successes and failures are an important part of meetings and company events”, “I rarely hear stories of past failures in my company”, and “My company believes in ‘fail early, fail fast, fail cheap.’”

After these modifications, a four-factor PCA with Varimax rotation, which included 31 items and explained 51.84% of the variance was accepted. Factor 1 accounted for 33,31% of the variance; Factor 2 for 7.86%; Factor 3 for 5.53%; and Factor 4 for 5.18% (Table 9). Following the criterion of factor loading equal to or higher than .40, Factor 1 consisted of items like “I believe my company punishes people that fail,” “My company considers failure to be unacceptable,” “I feel my organization wants me to avoid taking even calculated risks,” “I believe my company is willing to take some risks to create new innovative services or products,” and “I think my company prefers to avoid taking risks,” among others.

Table 9

Principal Component Analysis with Varimax Rotation

	Factor Loadings			
Item	OBV	OSSM	CRS	REC
My company considers failure to be unacceptable	**.81**	.03	-.01	.02
I believe my company punishes people that fail (R)	**.71**	-.00	**.67**	.39
My company accepts failure as an inevitable byproduct of taking initiatives	**.68**	.30	.28	.17
Mistakes are seen by my company as opportunities to learn	**.65**	**.41**	.21	.19
I feel my organization wants me to avoid taking even calculated risks (R)	**.63**	.26	.10	-.20
My company understands that risk taking is a necessary requirement for exploration	**.62**	**.40**	.27	-.01
I am encouraged at work to keep trying, even when something I try goes wrong	**.61**	.23	-.00	.00
I believe my company is willing to take some risks to create new innovative services or products	**.55**	**.43**	.10	.04
My company accepts that failure is a necessary part of success	**.59**	.29	.24	.30
Senior management doesn't understand that when you try something new, you sometimes fail (R)	**.53**	.08	-.18	.22
I feel criticized and evaluated if I explore new ideas and they do not work (R)	**.53**	.33	.06	.03
I think my company prefers to avoid taking risks	**.40**	.29	.17	.04
My manager has shared with me some of his/her own work mistakes	.25	**.72**	.02	.02
My manager supports me when I try different ways of doing things	**.46**	**.63**	-.22	-.03
When a project is not going as expected, there is a clear plan on how to end it before more resources are wasted	-.05	**.61**	.30	.22
I feel that my manager encourages me to take small and thoughtful risks	.38	**.59**	-.04	-.03
My manager has an analytical approach when mistakes occur that helps me understand why they happened	.23	**.59**	.11	.08
When a project is cancelled at work, it is analyzed to understand what went wrong in order to avoid making similar mistakes in the future	.07	**.58**	**.50**	.17
I feel that the rewards programs offered by my company encourage people to explore their ideas regardless of eventual outcomes	.21	**.55**	.25	.26
When failures take place in my company, they are not criticized, but analyzed to avoid them in the future	**.42**	**.53**	.22	.17
The company I work for values the need for exploration	**.49**	**.51**	.01	-.08
Stories about past successes and failures in my organization encourage me to try new things	.29	**.50**	.32	.30
At my company, stories of past failures are used to encourage employees to try new things	.11	**.50**	**.50**	.10
My company provides resources to develop pilot studies or prototypes of new products or services	.20	**.43**	-.14	.29
I feel less motivated to get involved in exploration if I know the results will affect my performance reward	.09	**.40**	-.34	.13
I believe my company's compensation practices reward pay-for-performance for tasks that involve exploration	-.01	.01	**.77**	.06
I think my company's pay programs tolerate failure in early stages of the exploration activity and reward long-term success	.23	.04	**.66**	-.08
The company I work for publicly expresses a tolerance for failure	.20	.22	**.50**	**.44**
My company allots special budgets to explore new projects/products	.17	.19	-.11	**.70**
My company organizes events that celebrate projects that did not succeed	-0.13	.11	.17	**.68**
I know people in my organization who were promoted even though they were involved in projects that failed	**.42**	-.04	.00	**.45**
Variance	33.26%	7.87%	5.53%	5.18%
Cumulative Variance	33.26%	41.13%	46.66%	51.84%

Note. (R)= item is reverse scored. (OBV)= Organizational Beliefs and Values. (OSSM)= Organizational and Supervisor Support and Motivation. (CRS)= Compensation and Reward Systems. (REC)= Recognition. Factor loadings ≥.40 are shown in boldface.

There were four items from the author's Risk Taking subscale, another four items from Psychological Safety, two items from supervisor support, and two additional items, each from the remaining aspects. The common characteristic among these items was the organizational beliefs on the central importance of risk taking and failure. Hence, this dimension was named "Organizational Values and Beliefs."

The second dimension was called "Organizational and Supervisor Support and Motivation." It consisted of 13 items such as "I feel that the rewards programs offered by my company encourage people to explore their ideas regardless of eventual outcomes," "I feel less motivated to get involved in exploration if I know the results will affect my performance reward," "At my company, stories of past failures are used to encourage employees to try new things," and "When failures take place in my company, they are not criticized, but analyzed to avoid them in the future." Four of the items included in this factor were originally from the Supervisor Support scale, two from the Compensation and Rewards Systems scale, two from Organizational Stories, another three from "Others," one from Psychological Safety, and the last item was original to Risk Taking subscale. Even though the variety of items comprising this factor, all shared a common denominator: the support provided by organizations, and by direct supervisors in risk taking and failure situations. The item "At my company, stories about past failures are used to encourage employees to try new things" was then included in this factor, even though it has a high cross loading with Factor 3 (.50).

Table 10

Extraction and Rotation of the Factors

Factor	Eigenvalues			Rotations Sums of Squared Loadings		
	Total	Variance (%)	Cumulative (%)	Total	Variance (%)	Cumulative (%)
Organizational Beliefs and Values	10.31	33.26	33.26	5.99	19.32	19.32
Organizational and Supervisor Support and Motivation	2.43	7.86	41.13	5.22	16.84	36.17
Compensation and Reward Systems	1.71	5.53	46.66	2.67	8.63	44.80
Recognition	1.6	5.18	51.84	2.18	7.03	51.84

Unlike previous factors, the "Compensation and Reward Systems" component was comprised by three items only: "I believe my company's compensation practices reward pay-for-performance for tasks that involve exploration," "I think my company's pay programs tolerate failure in early stages of the exploration activity and reward long-term success," and "The company I work for values the need for exploration." This last item was original to the "Others" subscale. The first two items were originally part of the Compensation and Rewards Systems subscale.

And lastly, the last component was named "Recognition". "My company organizes events that celebrate projects that did not succeed," "I know people in my organization who were promoted even though they were involved in projects that failed," and "My company allots special budgets to explore new projects/products" comprised this dimension. While two of the items were included initially with the Compensation and Rewards Systems, the other item was part of the "Others" subscale. The item "I know people in my organization who were promoted even though they were involved in projects that failed" was included in this dimension since it had a greater loading with

Factor 4 (.45) than Factor 1 (.42). Together all items highlighted the importance of recognition of different aspects needed for innovation.

To summarize, in search for the best model that would identify the underlying dimensions of Employees' Perceptions on Organizational Tolerance for Failure, a four-factor PCA with Varimax rotation model was accepted. It explained almost 52% of the variance of the 31 items comprising the scale. The new dimensions were: "Organizational Values and Beliefs," "Organizational and Supervisor Support and Motivation," "Compensation and Rewards Systems," and "Recognition."

Estimation of Reliability

Internal consistency reliability was estimated for all items included in the original scale. Cronbach alpha (α) was used as the measure of the internal consistency for the general scale and subscales. While the internal reliability test conducted for the original overall 35 items included in the Employees' Perceptions on Organizational Tolerance for Failure scale showed a high reliability (α = .92), some of the internal subscales failed to displayed acceptable results. Those ranged from as low as α = .38 for Compensation and Rewards Systems to α = .80 for Supervisor Support. Therefore, the author assumed the problem might be rooted in the way items were gathered. Once modifications were done and the final scale was established, the author run an additional analysis to measure the reliabilities of the overall scale and subscales. Table 11 shows the reliability for the overall scale (i.e. 31 items), which resulted in α = .92, indicating the scale was highly reliable to measure the intended concept of Employees' Perceptions on Organizational Tolerance for Failure (Table 12). The 12 items composing the "Organizational Values

and Beliefs" subscale showed a high internal consistency (α = .90). Regarding the "Organizational and Supervisor Support and Motivation" internal consistency was also high (α = .87) for the 13 items comprising the scale. The estimate of reliability for the Compensation and Rewards Systems displayed a modest internal consistency, α = .60. That being said, this subscale contained only three items. Finally, the Recognition subscale internal consistency showed the lowest reliability of all (α = .49). Eliminating some of the items did not appear to be a reasonable solution to increase the scale's reliability. One possible explanation of the lower reliability might relay on the number (three) of items comprising the scale. Furthermore, the final factor analysis showed that only two items clearly high-loaded with the dimension, whereas the additional item had a high cross loading with other dimension.

Table 11

Employees' Perceptions on Organizational Tolerance for Failure Scale: Reliability

	Cronbach α
Organizational Values and Beliefs	.90
Organizational and Supervisor Support and Motivation	.87
Compensation and Rewards Systems	.60
Recognition	.49
Overall Scale	.92

To conclude, analyses have shown that the overall internal consistency of the Employees' Perceptions on Organizational Tolerance for Failure Scale was highly reliable (α = .92). Also, two of the dimensions, Organizational Values and Beliefs and Organizational and Supervisor Support and Motivation, identified throughout this research have displayed high internal reliabilities (α = .90 and α = .87, respectively). The other two dimensions, Compensation and Rewards Systems and Recognition subscales, revealed a lower consistency (α = .60 and α = .49, respectively).

Discussion

The main purpose of this study was to develop a reliable assessment tool measuring employee perceptions of organizational tolerance for intelligent failure. This section will cover the author's evaluation of the scale, strengths and limitations of the study, suggestions for future research, and it will also provide scale's practical applications outside the academia domain.

Based on the analyses conducted for this research, the Employee Perceptions of Organizational Tolerance for Failure Scale was an acceptable first attempt to develop a tool measuring employee perceptions and beliefs regarding their employer's tolerance for failure. That being said, further modifications are needed to improve the reliability of some of the subscales.

Evaluation of the Scale

The descriptive statistics used revealed a relatively normal distribution for all items included in the scale. Pearson correlation on the Compensation and Reward Systems and Organizational Stories subscales did not show a consistent relationship among items. Risk Taking and Psychological Safety showed high and statistically significant inter-item relationships. Only one item, "My company believes in 'fail early, fail fast, fail cheap'" failed to display relationship with any other items in the Psychological Safety scale. Moderate to high relationships between items were found for the Supervisor Support and Others subscales.

An estimate of the reliability of the 31 final items in the scale was highly acceptable. Internal consistency for the Organizational Values and Beliefs and for the

Organizational and Supervisor Support and Motivation subscales was highly acceptable as well. However, the estimates of internal consistency for the Compensation and Rewards Systems and Recognition subscales were not acceptable.

Factor analyses showed that the developed measurement scale assesses the concept of Employees' Perceptions of Organizational Tolerance for Failure to a great extent. On the one hand, a principal component analysis with Varimax rotation showed that there were nine underlying components for the original 36 scale items. On the other hand, subsequent factor analysis, following determined criteria and modifications to find the best solution, revealed that the scale was composed only by four components. These components were named Compensation and Reward Systems, Organizational Values and Beliefs, Organizational and Supervisor Support and Motivation, and Recognition.

The final scale dimensions somewhat resembled the original subscales. Most of the original items were kept for the scale's final version; however, they were displayed in a different arrangement. Most of the new components were constituted by items found in different original subscales. The component that showed the most consistency with the original subscales was Organizational Values and Beliefs. From its 12 items, eight items were original to Risk Taking and Psychological Safety, with four items from each of the other dimensions. Differently, four out of the 13 items composing Organizational and Supervisor Support and Motivation were original to the Supervisor Support subscale. However, the rest came from other subscales. Compensation and Rewards Systems included two original subscale items and an additional "Others" item. And lastly, the new Recognition dimension combined two items from the original Compensation and

Rewards Systems with one from Other items. Therefore, it can be concluded that the items created by the author contributed to measure the concept of Employees' Perceptions on Organizational Tolerance for Failure, as shown by their overall internal reliability consistency.

That being said, the aspects found in previous empirical literature were not fully supported. The present research found that these independent aspects proposed by the existing literature as underlying factors of Organizational Tolerance for Failure were not as independent as hypothesized. The current study shows that these aspects are interrelated, and together form new underlying dimensions not considered in previous research.

Based on the reliability analyses, most of the proposed 31 items composing the Employees' Perceptions on Organizational Tolerance for Failure should be kept. None of the analyses showed that eliminating any of the final items increases the internal consistency of the overall scale. However, internal reliability analysis for the Compensation and Rewards Systems subscale revealed that eliminating the item, "The company I work for publicly expresses a tolerance for failure" would improve considerably the subscale reliability. Therefore, the author recommends removing this item from the final scale. Another dimension, Recognition, also showed a not acceptable internal reliability. The author believes that the main reason for these lower internal consistencies is the few number of items (three) constituting each dimension. Another suggestion would be to reorganize all items according to the best solution proposed in this study, a scale with the following four underlying components: Compensation and

Reward Systems, Organizational Values and Beliefs, Organizational and Supervisor Support and Motivation, and Recognition.

Practical Applications of the Scale

Organizations can make use of this scale as an assessment, developmental and change management tool in an organizational level. For organizations that already value the importance of exploration, this tool can serve as an assessment and developmental aid. That is, the instrument might help them identify areas for improvement that the organization may be dismissing. Also, this scale can contribute to confirm whether the intended message of tolerance for failure the organization is trying to portray is being actually received by its employees.

For those organizations looking for innovation, the implementation of this scale can help them first assess what employees believe is their organization's tolerance for failure capacity. This primary assessment will also provide organizations a frame of what areas need to be changed in order to develop new organizational competences to become more innovative.

No matter the organization's innovation capacity, when making practical use of this instrument, several behaviors are expected to take place in organizations. Organizational performance should improve over time as a result of new or improved exploration activities happening in the organization's realm. It is also logical to assume that once organizations engage in exploration, this will increase their patent portfolio.

Strengths and Limitations of the Scale

The author believes that this research represents an acceptable first attempt to operationalize the concept of Organizational Tolerance for Failure. A main strength of the developed scale is the fact that it measures employees' perceptions of the concept. These perceptions as generally literature shows are the ones responsible for the employees' behaviors. However, this first attempt of the concept's operationalization is not without its flaws. First, the data collected for this study were gathered from people all over the world. Although this may be considered a strength, the author believes that because of the sample size, there might not be enough data to make significant comparisons between different geographical locations.

Second, the present study did not differentiate between different types of organizations or industries. One main piece of feedback received by one participant asked to highlight the important distinction between non-profit to profit organizations. Both kinds of organizations have very distinct objectives, and therefore the scale might not be relevant to employees working, for example, in non-profit educational organizations. Under the assumption that organizational innovation is related to the development of new services and products with the ultimate goal of creating profit for organizations, non-profit organizations might be less driven by organizational innovation than for-profit organizations. Therefore, it is less likely to expect for non-profit organizations to invest resources in exploration than in for-profit organizations.

Future Research

Although the present study demonstrated that the Employees' Perceptions on Organizational Tolerance for Failure Scale is highly reliable, its validity needs yet to be determined. In addition, development of new items will be needed for the Compensation and Reward Systems subscale. Furthermore, a revision of the Recognition subscale is needed in order to improve its reliability. Also, future research might want to focus on applying the measurement scale to different types of organizations to establish its usability or to establish modifications to make it relevant, if finding organizational differences.

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